Abstracts

Microwave Measurement Techniques for Below-Resonance Junction Circulators (Short Papers)

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To have a full understanding of the experimental behavior of a junction circulator it is necessary to be able to measure the gyrator conductance, the susceptance slope parameter, and the frequencies of the two split resonant modes of the junction. It is also useful to be able to construct mode charts to determine the geometry of the device. The purpose of this short paper is to give simple methods by which each of these parameters may be measured in the case of the below-resonance stripline circulator. The techniques developed here all stem from the scattering and immittance matrices of the device. They are therefore quite general. They also require no phase information which makes them ideally suitable for reflectometer-type measurement. All measurements described here are made in the input transmission line of the device with the other two ports connected to similar transmission lines terminated in their characteristic impedance. The results obtained here apply to lossless circulators for which the two resonant modes are symmetrically split by the magnetic field, and for which the frequency variation of the third mode can be omitted.

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